DOCUMENT RESUME

ED 430 670 PS 027 554

AUTHOR Abraham, Ronalda; Turner, Nita
TITLE Mothers' Prenatal Activities Predict Adjustment to Pregnancy and Early Parenting.
PUB DATE 1999-04-00
NOTE 18p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (Albuquerque, NM, April 15-18, 1999).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Adjustment (to Environment); Affective Behavior; *Emotional Adjustment; Emotional Response; *Mothers; *Parent Child Relationship; Parents; Predictor Variables; *Pregnancy; *Social Adjustment
IDENTIFIERS *First Time Mothers; *Transitional Activities

ABSTRACT

This study examined the activities of pregnant women and how these activities facilitated a positive adjustment to pregnancy and early parenting. Subjects were 49 expectant first-time mothers ranging in age from 20 to 41 and attending a childhood preparation class. Eighty-two percent of the women were married. Subjects completed two questionnaires measuring prenatal activities and attitudes toward pregnancy and motherhood during their twenty-first to thirty-eighth week of pregnancy. Three to six weeks following the birth of their babies, the new mothers completed two questionnaires which assessed their affective reactions to their babies and the satisfaction they received from engaging in activities with their babies. Analysis of findings indicated that engaging in preparatory activities, such as nursery planning and obtaining items for the baby, facilitated a positive attitude toward pregnancy and further, that these activities were important predictors of women's positive adjustment to early parenting. Postnatal adjustment to motherhood was not significantly predicted by prenatal family support or marital status, but was predicted by overall prenatal adjustment, future parenting adjustment, how mothers felt their babies would respond to them after birth, and mothers' attitudes during pregnancy toward parenting. (Contains 14 references.) (KB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 430 670

Mothers' Prenatal Activities Predict Adjustment to Pregnancy and Early Parenting

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Ronalda Abraham and Nita Turner

Campion College, University of Regina

Abstract

Previous research has failed to investigate the activities of pregnant women and how these activities facilitate a positive adjustment to pregnancy and to early parenting. Forty-nine expectant first-time mothers attending a Preparation for Childbirth class completed two questionnaires measuring prenatal activities and attitudes towards pregnancy and motherhood. Three to six weeks following the birth of their babies, new mothers completed two questionnaires which assessed their affective reactions to their babies and the satisfaction they received from engaging in activities with their babies. Results indicated that engaging in preparatory activities, such as nursery planning and obtaining items for the baby, facilitate a positive attitude towards pregnancy and further, that these activities were important predictors of women's positive adjustment to early parenting.

Presented at the Society for Research in Child Development Conference, Albuquerque, NM, April, 1999.

For further information, please contact:

Ronni Abraham
Campion College
University of Regina
Regina, SK S4A 0A2
abrahamr@leroy.cc.uregina.ca

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Ronni Abraham

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

PS 027554

The authors wish to express their sincere gratitude to the mothers who participated in this study and for the tireless efforts of Sally Elliot of the Regina YMCA in recruiting their participation. Without Sally, this study would not have been possible.

BEST COPY AVAILABLE

Mothers' Prenatal Activities Predict Adjustment to Pregnancy and Early Parenting

The prenatal period is crucial for both parents and baby in determining future relationships between them. In particular, the relationship between mother and fetus during the prenatal period is thought to be of extreme importance for the future relationship (Bedics, 1994; Bustan & Coker, 1994; Chamberlain, 1994a, 1994b; Emerson, 1996; Halpern, 1992; Levinson, 1993; Muller, 1992; Schaffer & Lia-Hoagberg, 1994; Van den Bergh, 1990). According to Chamberlain (1994b), all unborn children develop close ties with their mothers and vice versa; the expectant mother and her unborn child "eat, sleep, exercise, smoke, take medicine, and have accidents together" (p. 17). By painstakingly pointing out all the responsibilities the expectant mother has towards her baby, and ignoring the impact of this new intimate relationship on her, more stress may be created. Yet pregnancy itself is a life stress which affects every aspect of a women's life (Bedics, 1994). Mothers are consistently informed that they should focus only on the needs of their unborn children, ignoring their own needs. Evidence of this claim is found in the fact that research in this area tends to focus on the effects of prenatal experiences on the fetus, completely ignoring the mother. Further, there are no studies that attempt to assess the impact of these activities on women's adjustment to parenting during the neonatal period.

Very early gestationally the fetus interacts with and is affected by the fetal environment created by the mother (Ward, 1991 as cited in Chamberlain, 1994a). This is due to the fact that even prenatal infants make increasing use of their senses, beginning around 7 weeks gestation. For example, the fetus becomes sensitive to touch, and reacts to a stroke on the cheek or a touch on the lips, as early as 7 weeks gestation (Chamberlain, 1994b; Hepper et al., 1994). It has also been found that the prenate has a "sweet tooth." By 14 weeks gestation, the prenate can be viewed sucking and swallowing via ultrasound (Chamberlain, 1994b), and shows increased swallowing when saccharin is added to amniotic fluid (Hepper et al., 1994). The first eye movements are observed around 16 weeks of gestation (Hepper et al.). Studies have found that a bright light shone on the mother's abdomen causes increased heart rate and/or increased movement in the prenate (Karmiloff-Smith, 1995).

One sound that has been widely studied is audition. The fetus is capable of listening and responding to sound by 16 weeks gestation, even before the ear is completely formed (Chamberlain, 1994a). The presentation of sound to a fetus causes changes in heart rate and motor responses (Hepper & Shahidullah, 1994; Karmiloff-Smith, 1995). Karmiloff-Smith also asserts that during the last three months of pregnancy, the fetus actively processes incoming

auditory input, distinguishing between separate sounds, such as language and music. The most researched sound that the fetus responds to is the mother's voice. According to Chamberlain (1994b), this sound becomes a significant link between mother and child, even before birth. This is because babies are "socially oriented" (p.17) and interact regularly with their mothers (Chamberlain). Several studies have indicated that the fetus becomes familiar with and is comforted by the mother's voice postnatally (DeCasper & Spence, 1987; Hepper et al., 1994). However, it is not known what effects talking to the fetus has on the mother prenatally or postnatally.

Yet, the fetus is aware of more than physical sensations. As Chamberlain (1994b) asserts, the baby is affected by everything the mother is affected by, including maternal emotions. For example, if an expectant mother watches something frightening on television, the prenate reacts to the mother's fear (Correia, Leader, & Clark, 1992 as cited in Chamberlain, 1994b). Research suggests that maternal emotions have a significant effect on the occurrence and duration of fetal motor activity, as well as on fetal development (Van den Bergh, 1990). Almost anything that upsets the mother will upset the fetus. Emotions such as anger, anxiety, and fear experienced by the mother will often result in furious kicking by the prenate (Levinson, 1993). Van den Bergh has found that mothers under severe emotional stress tend to have more hyperactive fetuses. Conversely, less intense maternal emotions, such as those that accompany listening to soothing music, have a calming affect on the fetus (Van den Bergh). What is yet to be investigated, however, is the impact of a mother's emotions on her perception of the developing relationship between herself and her child.

Major factors that affect an unborn child include stress, and emotional and psychological disturbances. Studies conducted by Van den Bergh (1990) and Groom et al (1995) found that infants of women with high anxiety levels both pre and postnatally cry significantly more than infants of women with lower levels of anxiety. Their parents as having difficult temperaments often view these infants. Chamberlain (1994a) found that a mother's prenatal stress level correlates with birth complications, developmental set backs, and childhood abnormalities. A mother's psychological status during pregnancy may also have significant effects on her infant's behavior. Studies have found that depressed mothers tend to give birth to babies who cry excessively and are difficult to soothe (Groom et al.; Zuckerman et al., 1990 as cited in Chamberlain, 1994b). Van den Berg's (1990) study on the effect of maternal emotions on neonatal behavior indicates that infants of emotionally disturbed women tend to have extremely high activity levels after birth. These infants also tend to be irritable, poor sleepers, and are often prone to gastrointestinal difficulties.

However, researchers contend that the effects of stress, and emotional and psychological disturbances in the mother during pregnancy reach beyond infancy and into childhood. Levinson (1993) suggests many problematic childhoods can be attributed, if only in part, to the physical and emotional environment created in the womb. It has been reported by researchers who studied the records of a group of severely disturbed children and adolescents that the majority were born to unmarried mothers who did not plan the pregnancy, to mothers who were unhappy with the pregnancy, to mothers who were engaged in a stressful family life, and to mothers who felt emotionally rejected for being pregnant (Ward, 1991 as cited in Chamberlain, 1994b). In contrast, marital satisfaction has been found to be positively correlated with a strong prenatal bond (Muller, 1992). Levinson suggests that this is due to the fact that marital discord is a major stress factor affecting the mother. As noted above, many women allow other aspects of their lives to take priority over their pregnancies, including stressors (Bedics, 1994).

It is not only the mother's emotional state that can affect her unborn child. The activities an expectant mother engages in can also significantly affect the fetus. Poor health behaviors such as smoking and alcohol consumption during pregnancy can alter and deter fetal growth and development (Groome et al., 1995). Prenatal cigarette exposure has been linked to lower scores in cognition and receptive language skills in children ages 5 and 6 (Chamberlain, 1994a). Most women know of the hazardous effects these actions can have on their unborn children. However, few expectant mothers consider the effects other activities directed at preparing for the arrival of their babies can have on the prenatal infant (Chamberlain). For example, activities such as enrolling in prenatal classes and viewing an early ultrasound have been found to be beneficial to mother (Bedics, 1993; Halpern, 1992; Schaffer et al., 1994).

Bedics (1993) suggests that the adequacy of prenatal care has a direct relationship to pregnancy outcome. Women who have late or no prenatal care are more likely to have low birth weight babies (Schaffer et al., 1994). Halpern (1992) suggests that early enrollment and active participation in prenatal classes can reduce the risk of infant mortality and premature birth. Bedics (1994) suggests that women who fail to see the need for prenatal care are often single women from low income families. They are often less educated about the value of prenatal care, and have little family support. Through interviews, Bedics questioned women who had not obtained prenatal care as to their reasons for this decision. Many of these expectant mothers stated either that other things in their lives took priority over their pregnancies or that they did not want the baby.

It is known that a mother's activities during pregnancy affect the fetus. Yet, do these same activities affect the mother? Are there other, separate activities which aid expectant mothers in adjusting to their pregnancies and eventual motherhood? Muller (1992) asserts that early pregnancy ultrasounds create in mothers a desire to care for their unborn infants. On top of the benefits prenatal classes offer an unborn child, many mothers find these classes personally rewarding. Schaffer and her colleague (1994) asked a group of pregnant women to list the rewards involved with prenatal care. Reassurance of maternal health and reassurance of infant health were listed as the two most important rewards. These women were found to have very supportive families who encouraged and often insisted on their enrollment in prenatal classes. This, argues Schaffer et al., is what reinforces these mothers' beliefs in the benefits of prenatal care. Chamberlain (1994b) reports that women who communicate with their prenatal infants are more positive about their pregnancies, and are more confident about motherhood. Yet what other prenatal activities may create more confidence and satisfaction in pregnant women? How do these particular activities impact on each other and on the expecting mother? Are these activities important only during the pregnancy or do they impact adjustment to parenting once the baby arrives? The importance of these questions is clear. If the needs and stresses of expectant mothers are acknowledged, and if these mothers are aided in coping with the changes they themselves experience, it is quite possible that they will develop a more positive attitude toward their pregnancies and their babies, and toward parenting in general.

As noted above, virtually no research has been done to investigate the activities pregnant women engage in to allow them to be more positive about their pregnancies. As well, nothing is known about the importance of these activities on the adjustment to early parenting. Studies have not even been undertaken to determine the types of activities women participate in during pregnancy. This study examines the prenatal activities engaged in by expectant women to identify the types of baby-focused activities that facilitate adjustment to pregnancy and aid in creating positive attitudes towards parenting during pregnancy. When the baby is born, the impact of these prenatal activities on adjustment to parenting a newborn will also be examined.

Method

Participants

Forty-nine women were recruited from a Preparation for Childbirth class. Since no previous research has investigated the impact of a mother's prenatal activities on maternal adjustment, women who could be expected to engage in higher rates of these activities and show higher levels of maternal adjustment were specifically recruited for the study. Ages of the participants ranged from 20 to 41, with a mean age of 27.8, s.d.= 4.89. Week of pregnancy for prenatal data collection ranged from 21 weeks to 38 weeks, with a mean of 31.57. Eighty-two percent of the women were married, and all were first time mothers at the time of the study, although 18% had a previous unsuccessful pregnancy. Approximately 39% of the women participating held professional occupations, 41% did technical work, and 14% were employed as laborers. Only 2% of participants were unemployed, and 4% were students.

Prenatal Measures

Mothers filled out two questionnaires. The Prenatal Activities survey, containing questions which examined activities during pregnancy, was given to determine what the subjects had been doing to prepare themselves and their homes for the birth of a baby. It contained a mixture of closed and open-ended questions. The second survey, Prenatal Self-Report Inventory, used a scale on which the subjects rated their attitudes towards their pregnancies and their expectations for birth and motherhood.

Postnatal Measures

Mothers completed two scales: an Enjoyment Scale which measured mothers' enjoyment of the newborn and the What Being the Parent of a New Baby is Like Scale which measured the new mother's satisfaction with parenting activities and their own parenting abilities.

Procedure

Potential participants were approached in their weekly Preparation for Childbirth class at the YMCA. The instructor of the class introduced the study to the women and gave them the opportunity to voluntarily participate. Women who were interested received a package containing the Prenatal Activities Questionnaire, and the Prenatal Self-Report Inventory to take home to complete. The surveys were to be returned in a sealed envelope to the Preparation for

Childbirth class instructor on the day of their next class, although many women returned the envelopes during later classes.

Three to six weeks following the birth of their babies, new mothers were mailed the two postnatal questionnaires that they completed and returned by mail.

Results

Prenatal Activities

The first survey entitled "Prenatal Activities" investigated the types of activities pregnant women engaged in to prepare for the new baby, and aspects of interaction with the fetus. The majority of the women surveyed (88.7%) had begun preparing a nursery for their new babies; 62% had begun decorations within the nursery, and 36.6% had developed a theme upon which they based the decorations. Approximately 55% of the women had obtained three or more pieces of furniture for the nursery. A high majority of these women (90%) had also obtained clothes for the baby, 67.6% had obtained toys, and 42.9% had obtained at least four other accessories needed for the baby, such as baby bathtubs, car seats, and strollers. All aspects of nursery planning and preparation, such as beginning a nursery, developing a theme, decorating the nursery, and acquiring nursery furniture, were combined to create an overall nursery planning variable, with a possible low score of 3 (no planning) and a possible high score of 13 (large amount of planning). Participants scored within a range of 3 and 12, with a mean score of 7.65 and a standard deviation of 2.05. As well, nursery preparation, naming the baby, and buying furniture, toys, clothes and accessories for the baby were combined to create an overall baby planning variable, with a possible low score of 6 (no planning) and a possible high score of 31 (large amount of planning). Scores for participants ranged from 6 to 26, with a mean of 16 and a standard deviation of 4.22.

To determine the amount of family support participants received in preparing for their babies, women were questioned as to the origin of the various items (nursery, furniture, clothes, toys, and accessories) they had obtained for their new baby. Receiving hand-me-downs and borrowing from family members were combined with marital status to create a family support variable, with the lowest possible score being 1(virtually no family support) and the highest possible score being 19 (large amount of family support). Participants scored within a range of 2 and 17, with a mean of 11.92 and a standard deviation of 2.73.

A variable was also created to determine the amount of planning women had done for their babies beyond the newborn stage. Whether or not they had designed a nursery suitable for a one or two year old child, and whether or not

they had obtained toys, clothes, and accessories for a child this age combined to create this measure, with a possible low score of 1 (little future planning) and a possible high score of 14 (much future planning). Subjects scored within a range of 1 and 14, with a mean score of 9.94 and a standard deviation of 3.35.

Many of the women surveyed played music for their babies prenatally (69.4%), as well as read to their babies prenatally (40.8%). Many of the women had also read some information regarding their pregnancy and parenthood: 90.1% had read books on pregnancy, 46.5% had read and/or subscribed to parenting magazines, and 30.6% had read books on child development. Almost all of the women (89.8%) talked to their babies, and 38.8% kept journals throughout pregnancy. All of the women had had ultrasounds, and 85.7% had kept a picture from the ultrasound. Only 8.2% of the participants knew their babies' sex, and less than half (44.9%) had chosen names for their babies.

Relationships among Prenatal Activities

Women who received high levels of support from family were more likely to engage in high rates of baby planning ($r = .63$, $p \leq .000$). Playing music for the baby and reading to the baby were likely to occur together ($r = .37$, $p \leq .01$). Developing a theme within the nursery was also found to be significantly related to journalling during pregnancy ($r = .44$, $p \leq .002$), as was overall nursery planning ($r = .32$, $p \leq .02$). Journalling during pregnancy also had a near significant relationship with talking to the baby prenatally ($r = .27$, $p \leq .06$), and talking to the baby was found to be significantly related to reading to the baby ($r = .28$, $p \leq .05$).

There was no significant relationship found between knowing the sex of the baby and overall baby planning ($r = .10$, ns), nor between reading information on pregnancy and parenting and overall baby planning ($r = .16$, ns). Because all of the women in this select sample were enrolled in prenatal care, and all had ultrasounds, detecting relationships between these and other prenatal activities was not possible.

Relationships between Prenatal Activities and Demographics

Week of pregnancy was found to be a predictor of overall nursery planning ($r = .44$, $p \leq .001$), as well as overall baby planning ($r = .34$, $p \leq .02$). There was, however, no significant relationship between marital status and overall baby planning ($r = -.03$, ns). Neither age nor occupation was significantly related to any prenatal activities.

Prenatal Maternal Adjustment

Prenatal maternal adjustment variables were created in such a way that a low score on the adjustment scale was related to positive adjustment and a high score was related to negative adjustment. The overall prenatal maternal adjustment variable measured adjustment in terms of attitudes towards pregnancy and expectations for motherhood

(Prenatal Self-Report Inventory with a possible range 30-150). Women scored within a range of 31 and 81, with a mean of 52.58 and a standard deviation of 11.16. The overall prenatal maternal adjustment variable was further broken down into 6 sub-variables: labor anxiety, future parenting responsibilities, health and developmental concerns, baby's response, parenting during pregnancy, and pregnancy experience.

The labor anxiety variable measured the participant's feelings towards the upcoming delivery experience (possible range 2 - 10). Participants scored within a range of 2 and 7, with a mean of 4.13 and a standard deviation of 1.33. The future parenting responsibilities variable measured the participant's attitudes towards the responsibilities they would have when the baby arrived (possible range 17-85). Participants scored within a range of 17 and 48, with a mean score of 29.99, and a standard deviation of 7.25. The prenatal health and developmental concern variable measured the extent to which the expecting mother worried about her baby's health and development before and after birth (possible range 3-15). Participants scored within a range of 3 and 10, with a mean score of 6.04, and a standard deviation of 1.93. The baby's response variable measured how the participant felt her baby would respond to her after the baby was born (possible range 3-15). Participants score within a range of 3 and 9, with a mean of 4.48 and a standard deviation of 1.61. The parenting during pregnancy variable measured the participant's attitudes towards the parenting responsibilities she had while pregnant (possible range 3-15). Participants scored within a range of 3 and 8, with a mean score of 5.03 and a standard deviation of 1.45. The final sub-variable was the pregnancy experience variable which measured the participant's overall attitude towards the pregnancy experience as a whole (possible range 1-5). Participants scored within a range of 1 and 4, with a mean of 1.88 and a standard deviation of 0.90.

Predictors of Prenatal Maternal Adjustment

Overall prenatal maternal adjustment to pregnancy and parenting was predicted by week of pregnancy ($F(1, 46) = .10.38, p \leq .002$), with better adjustment occurring earlier in the pregnancy; and had a near significant relationship with participant age ($F(1,46) = .3.07, p \leq .09$) with older women showing better adjustment. None of family support ($F(1, 46) = .07$, ns), marital status ($F(1, 46) = .02$, ns), and overall baby planning ($F(1, 46) = .01$, ns) was found to be significant predictors of overall prenatal adjustment. Similarly, none of reading to the baby, talking to the baby, journalling, and reading information about pregnancy and parenting was found to be significantly related to overall adjustment.

Greater **labor anxiety** appeared later in the pregnancy ($F(1, 46) = 4.07, p \leq .05$), and had a near significant relationship with greater age ($F(1, 46) = 2.95, p \leq .09$) and occupation ($F(1, 46) = 2.97, p \leq .09$). Labor anxiety was

not, however, predicted by family support (F (1, 46) = .13, ns) or marital status (F (1, 46) = .17, ns). Planning for the baby at one and two years of age was found to be a significant predictor of lower labor anxiety (F (1, 46) = 6.53, $p \leq$ .01), although overall baby planning was not (ns).

Future parenting adjustment was significantly predicted by week of pregnancy (F (1,46) = 4.90, $p \leq .03$). Future parenting adjustment had a near significant relationship with age (F (1, 47) = 2.81, $p \leq .10$) and reading parenting magazines (F (1, 47) = 2.90, $p \leq .10$). Overall baby planning was not found to be a significant predictor of future parenting, nor were family support or marital status.

Prenatal health and developmental concerns had near-significant relationships with several factors. High rates of health and developmental concerns for the baby reduced overall baby planning (F (1, 47) = 3.82, $p \leq .06$), and obtaining toys for the baby (F (1, 47) = 3.54, $p \leq .07$). As well, having previous pregnancies were found to increase these concerns (F (1, 47) = 2.84, $p \leq .10$). Health and developmental concern was not significantly predicted by family support, or by marital status. Similarly, neither age nor week of pregnancy had a significant relationship with health and developmental concern.

Interestingly, week of pregnancy was found to be the only significant predictor of how mothers' felt their babies would respond to them after birth (F (1, 46) = 8.63, $p \leq .005$). Whether or not music was played for the baby prenatally was found to be a near-significant predictor of **baby's response** (F (1, 46) = 2.77, $p \leq .10$). Reading to the baby was not found to be a significant predictor of baby's response, nor was overall baby planning, family support, or marital status.

Positive feelings about **parenting during pregnancy** were present earlier in the pregnancy (F (1, 47) = 10.32, $p \leq .002$). However, parenting during pregnancy was not found to be significantly predicted by any other baby planning activities, including overall baby planning (F (1, 47) = .36, ns). In addition, parenting during pregnancy was not significantly related to family support, marital status, or friend support.

Overall positive **pregnancy experience** was found to be predicted by overall baby planning (F (1, 47) = 3.94, $p \leq 05$), as well as by obtaining nursery furniture (F (1, 47) = 4.07, $p \leq .05$). Pregnancy experience had a near-significant relationship with acquiring baby clothes (F (1, 47) = 3.27, $p \leq .08$) and acquiring baby accessories (F (1, 47) = 2.81, $p \leq .10$). As well, pregnancy experience was significantly predicted by planning for the baby at one and two years of age (F (1, 46) = 5.01, $p \leq .03$). Week of pregnancy (F (1, 47) = 6.08, $p \leq .02$) was significantly related to overall pregnancy experience.

Predictors of Postnatal Maternal Adjustment

Overall postnatal adjustment to motherhood was not found to be significantly predicted by prenatal family support ($F(1,37) = 2.75$, ns) or by marital status ($F(1, 37) = .14$, ns). Overall postnatal adjustment had a near-significant relationship with overall prenatal baby planning ($F(1, 37) = 3.30$, $p \leq .08$), but was not related to any single baby planning activity. Overall postnatal adjustment was also found to be significantly predicted by several prenatal adjustment variables: overall prenatal adjustment ($F(1, 37) = 7.96$, $p \leq .01$), future parenting adjustment ($F(1, 37) = 7.41$, $p \leq .01$), how mothers feel their babies will respond to them after birth ($F(1, 37) = 8.45$, $p \leq .01$), and mothers' attitudes towards their parenting responsibilities during pregnancy ($F(1, 37) = 4.86$, $p \leq .03$). Overall postnatal adjustment to motherhood was not, however, predicted by prenatal health concerns, labor anxiety, or overall pregnancy experience.

Overall postnatal satisfaction with motherhood was found to be significantly predicted by overall prenatal nursery planning ($F(1, 44) = 3.98$, $p \leq .05$), but not by overall prenatal baby planning ($F(1, 44) = 2.62$, ns), or any other single baby planning activity. Overall postnatal satisfaction was found to have a near-significant relationship with journalling during pregnancy ($F(1, 44) = 2.93$, $p \leq .09$), as well as with reading parenting magazines during pregnancy ($F(1, 44) = 3.23$, $p \leq .08$). Specific prenatal adjustment variables were also found to be significant predictors of overall postnatal satisfaction: overall prenatal adjustment ($F(1, 44) = 8.50$, $p \leq .01$), future parenting adjustment ($F(1, 44) = 6.11$), $p \leq .02$), and baby's response ($F(1, 44) = 16.33$, $p \leq .0002$). The relationship between overall pregnancy experience and overall postnatal adjustment was found to be approaching significance ($F(1, 44) = 3.73$, $p \leq .06$), as was that between overall postnatal adjustment and mothers' attitudes towards parenting responsibilities during pregnancy ($F(1, 44) = 3.22$, $p \leq .08$).

Overall postnatal pleasure with motherhood was found to be significantly predicted by prenatal family support ($F(1, 39) = 7.06$, $p \leq .01$) but not by marital status ($F(1, 39) = .12$, ns). Overall postnatal pleasure was also predicted by overall prenatal baby planning ($F(1, 39) = 4.04$, $p \leq .05$), but not by overall prenatal nursery planning ($F(1, 39) = .99$, ns), or any other single prenatal planning activity. Overall postnatal pleasure was also significantly predicted by certain prenatal adjustment variables: overall pregnancy experience ($F(1, 39) = 3.95$, $p \leq .05$) and parenting during pregnancy ($F(1, 39) = 4.84$, $p \leq .03$). Overall postnatal pleasure had near significant relationships with the baby's response variable ($F(1, 39) = 3.79$, $p \leq .06$) and overall prenatal adjustment ($F(1, 39) = 2.80$, $p \leq .10$), but not with future parenting adjustment (ns).

The extent to which a mother felt she was a **successful parent** was not significantly predicted by prenatal family support, nor by any prenatal planning activities. A mother's feelings about being a successful parent were only predicted by prenatal adjustment variables: overall prenatal adjustment ($F(1, 44) = 16.38$, $p \leq .0002$), overall pregnancy experience ($F(1, 44) = 10.91$, $p \leq .002$), future parenting adjustment ($F(1, 44) = 12.97$, $p \leq .0008$), baby's response ($F(1, 44) = 27.12$, $p \leq .0000$), and parenting during pregnancy ($F(1, 44) = 6.71$, $p \leq .01$).

Mothers' postnatal **stress levels** were reduced by planning for the baby at one and two years of age during pregnancy ($F(1, 46) = 6.79$, $p \leq .01$), but not by any other prenatal baby planning activities, including overall prenatal baby planning ($F(1, 47) = .19$, ns). Postnatal stress levels were also found to be lower in women who played music for the baby during pregnancy ($F(1, 47) = 5.02$, $p \leq .03$), and in women who read to the baby during pregnancy ($F(1, 47) = 6.38$, $p \leq .02$). Lower postnatal stress levels were also found to have near-significant relationships with both reading pregnancy books during pregnancy ($F(1, 47) = 3.30$, $p \leq .08$), and reading parenting magazines during pregnancy ($F(1, 47) = 3,76$, $p \leq .06$). Mothers' postnatal stress levels were not, however, predicted by any prenatal adjustment variables.

How a mother views her **postnatal relationship** with her baby was found to have a near-significant relationship with overall prenatal nursery planning ($F(1, 44) = 3.61$, $p \leq .06$), but no relationship with overall prenatal baby planning ($F(1, 44) = 1.64$, ns). In addition, there was no significant relationship between the postnatal relationship with the baby and talking to the baby prenatally ($F(1, 44) = 2.00$, ns), reading to the baby prenatally ($F(1, 44) = .16$, ns), or playing music for the baby prenatally ($F(1, 44) = .03$, ns). Several prenatal adjustment variables were found to be significant predictors of a mother's view of her postnatal relationship with her baby: overall prenatal adjustment ($F(1, 44) = 8.05$, $p \leq .01$), overall pregnancy experience ($F(1, 44) = 7.14$, $p \leq .01$), how a mother feels her baby will respond to her after birth ($F(1, 44) = 18.49$, $p \leq .0001$), and future parenting adjustment ($F(1,44) = 5.13$, $p \leq .03$). As well, parenting during pregnancy has a near significant relationship with postnatal relationship ($F(1, 44) = 3.39$, $p \leq .07$).

The amount of pleasure a mother receives from her **baby's temperament** was found to be predicted by prenatal family support ($F(1, 46) = 4.89$, $p \leq .03$), but not by marital status ($F(1, 46) = .06$, ns). Pleasure from the baby's temperament was also significantly predicted by overall prenatal baby planning ($F(1, 46) = 3.93$, $p \leq .05$), and has a near-significant relationship with overall prenatal nursery planning ($F(1, 46) = 3.53$, $p \leq .07$). Pleasure received from the baby's temperament was not significantly related to any prenatal adjustment variables.

The amount of pleasure mothers receive from **caretaking tasks** was found to be significantly predicted by prenatal family support ($F(1, 47) = 4.61, p \leq .04$), but not by marital status ($F(1, 47) = .19$, ns). Pleasure received from caretaking tasks had a near-significant relationship with overall prenatal baby planning ($F(1, 47) = 2.73, p \leq .10$). Pleasure from caretaking tasks was also found to be significantly predicted by some prenatal adjustment variables: overall pregnancy experience ($F(1, 47) = 17.45, p \leq .0001$) and baby's response ($F(1, 46) = 5.58, p \leq .02$). However, pleasure from caretaking tasks is not significantly related to future parenting adjustment ($F(1, 47) = .87$, ns), nor to overall prenatal adjustment ($F(1, 46) = 2.18$, ns).

The amount of pleasure a mother receives from her **baby's appearance** was significantly predicted only by talking to the baby prenatally ($F(1, 45) = 6.78, p \leq .01$). Pleasure from appearance had no relationship with family support ($F(1,45) = 1.49$, ns) or marital status ($F(1, 45) = 2.44$, ns). Pleasure from the baby's appearance had a near-significant relationship with overall prenatal baby planning ($F(1, 45) = 3.47, p \leq .07$), but not with any individual prenatal baby planning activity. Pleasure from appearance was not significantly predicted by any prenatal adjustment variable.

The amount of pleasure a mother receives from **physical contact** with her baby was significantly predicted by family support ($F(1, 47) = 5.56, p \leq .02$), but not by marital status ($F(1, 47) = 2.12$, ns). Pleasure from physical contact was not significantly related to any prenatal baby planning activities. Pleasure from physical contact with the baby had a significant relationship with one prenatal adjustment variable: mothers' attitudes towards their parenting responsibilities during pregnancy ($F(1, 46) = 7.96, p \leq .007$), and a near-significant relationship with overall prenatal adjustment ($F(1, 46) = 3.04, p \leq .09$).

Discussion

The sample of women surveyed were selected from a group of women enrolled in a Participation for Childbirth Class, under the assumption that these women would be adjusting well to pregnancy and subsequent parenthood. Overall, these women were found to be well-adjusted both prenatally and postnatally, and specific patterns of activities they participated in during their pregnancies appear to impact on this adjustment.

Prenatal Adjustment to Pregnancy and Parenting

Week of pregnancy has a significant impact on mothers' adjustment to pregnancy and their attitudes towards upcoming motherhood. In fact mothers' week of pregnancy is the only significant predictor of both mothers' attitudes

towards the responsibilities they will have when their babies arrive, and mothers' feelings about how their babies will respond to them postnatally. However, the most positive attitudes appear before the third trimester. That is, the later a woman is in her pregnancy, the less positive she feels towards her pregnancy and her future as a mother. This suggests that as the arrival of the baby draws nearer, expectant mothers begin to experience more anxiety and less confidence in their abilities to parent. Perhaps while initially the idea of a new baby is exciting, it gradually loses its "dream-like" quality as the responsibilities of new parenthood and the expectations of expectant mothers become more of a reality.

However, other demographic factors such as age, occupation, or the presence of a spouse are unrelated to mothers' prenatal adjustment, or to the types of prenatal activities women engage in. This suggests that the life circumstances of a woman when she becomes pregnant has little impact on what she does to prepare for her baby, nor does it determine her outlook on parenthood or how she adjusts to pregnancy.

Interestingly, family support has no impact on mothers' prenatal maternal adjustment. One might think that the presence of supportive family members, particularly a partner, who share in the entire pregnancy experience would result in higher adjustment levels. However, this is not the case. As well, prenatal baby planning activities lack the impact on prenatal maternal adjustment that was predicted. While increased participation in planning for the arrival of a new baby relates to a more positive pregnancy experience, it has little impact on mothers' attitudes towards upcoming motherhood, and is not at all related to overall prenatal adjustment.

However, higher prenatal health concerns for the baby are related to a lack of prenatal baby planning. The more concerned women are that their babies are in poor health or are not developing normally, the less planning they do. In addition, women who make plans for their babies at one and two years of age tend to have fewer health and developmental concerns. It is possible that women who are concerned about the health of their unborn child do not accumulate baby items or make future plans because of the fear that there may be some problem with their babies. These women may not want to plan too far ahead into their babies' futures in case there is a significant impairment in their babies' growth and development, or a pregnancy loss. This is an area of maternal prenatal experiences that would benefit from future research.

The lack of significant contributors to expectant mothers' adjustment to pregnancy and their attitudes towards future parenthood, and the importance of week of pregnancy, suggests that there are few factors which can facilitate

positive prenatal adjustment once expectant mothers' reach a specific stage in their pregnancies. As mothers' progressively move towards the final stages of their pregnancies, their attitudes towards their pregnancies and the responsibilities they will soon face as new parents become increasingly negative. High levels of support from family and engaging in prenatal baby-focused activities do not appear to promote a more positive adjustment in these women. While participating in baby planning activities related to a more positive pregnancy experience, it may be that women who are enjoying the pregnancy experience demonstrate this by making plans for their new babies. Regardless, prenatal baby-focused activities lack the impact on prenatal maternal adjustment they were predicted to have. However, these activities become extremely important after the arrival of the new baby.

Postnatal Adjustment to Motherhood

While the activities mothers engage in while pregnant have little impact on their prenatal adjustment, these activities gain significance for mothers' postnatal adjustment. For example, playing music for the baby prenatally decreases mothers' postnatal stress levels. In addition, the more baby planning activities mothers' engage in prenatally, the more pleasure they receive from their babies and the responsibilities of motherhood. As well prenatal planning for the baby increases mothers' overall postnatal adjustment to motherhood. These findings suggest that mothers view the baby-focused activities they engage in during pregnancy as valuable postnatally. Although mothers appear to be unaffected by these activities prenatally, it is in retrospect that they realize the importance of these activities and the impact these activities have on their babies and their relationships with their babies postnatally. That is, after their babies are born mothers feel that the activities they participated in throughout their pregnancies were positive influences on their new children, and thus they have a more positive view of themselves as parents.

Family support, while having no impact on maternal adjustment prenatally, takes a fairly active role in facilitating mothers' postnatal adjustment to parenthood. A higher amount of family support increases mothers' pleasure with caretaking tasks, with physical contact with their babies, and with their babies' temperaments. As well, an increased amount of family support relates to mothers' overall pleasure with new parenthood. While it does not affect mothers' postnatal satisfaction with parenthood or overall postnatal adjustment, the support new mothers receive from their families does have a significant impact on the extent to which they enjoy being mothers.

Along with the activities women engage in during pregnancy and the amount of support they receive from family members, postnatal adjustment to motherhood is also affected by women's adjustment to pregnancy and the attitudes they held at that time toward motherhood. Overall positive prenatal adjustment leads to overall positive postnatal adjustment. In addition, positive prenatal attitudes towards future parenting responsibilities, and positive prenatal attitudes toward parenting-type responsibilities women had while pregnant are related to overall positive postnatal adjustment. Prenatally, women who feel their babies will respond positively to them after birth, tend to be more positively adjusted to postnatal motherhood as well.

Other aspects of postnatal adjustment are affected by prenatal adjustment as well. For example, women who, prenatally, feel their babies will respond positively to them after birth tend to experience more postnatal pleasure from new motherhood, tend to feel that they have a positive postnatal relationship with their babies, and tend to view themselves as successful parents. As well, women who view themselves as successful postnatal parents tend to have been more positively adjusted prenatally, and tended to have had a more positive prenatal outlook on future parenting responsibilities. Having a positive pregnancy experience leads to higher levels of postnatal pleasure, and higher levels of postnatal satisfaction with motherhood.

These relationships between prenatal and postnatal aspects of adjustment suggest that a positive prenatal experience leads to a positive postnatal experience. Mothers who, during pregnancy feel that their babies will love them feel successful as parents postnatally and feel close to their babies after birth. Women who enjoy the responsibilities they have while pregnant and who look forward to the tasks of motherhood while pregnant tend to continue to enjoy motherhood responsibilities, and feel they are good parents. Enjoying the overall pregnancy experience leads to enjoying the experience of being a mother.

Positive prenatal adjustment predicts a positive experience with motherhood. Although there are very few predictors of prenatal adjustment in terms of the prenatal activities women engage in, the women surveyed are a select sample, chosen on the basis of their participation in activities known to be associated with positive adjustment to pregnancy. It is likely that there are important personality and interpersonal factors in these women's lives, other than prenatal activities or prenatal family support, which affect their adjustment to pregnancy. None of these factors were a part of the present investigation but should be included in future work on this topic. It is important to note, however,

that even in this sample of well-adjusted new mothers, the prenatal baby-focused activities women engage in are significant in women's postnatal adjustment to motherhood.

Another significant shortfall of the current study is the absence of any information about the expectant father's role in baby planning, his adjustment to upcoming parental responsibilities, and his feelings about his new fatherhood and newborn. While interesting information per se, for women with male partners, this information is almost certainly an important part of the complete picture of pregnancy and new motherhood.

References

Bedics, B.C. (1994). Nonuse of prenatal care: Implications for social work involvement. Health and Social Work, 19 (2), 84-92.

Bustan, M.N., & Coker, A.L. (1994). Maternal attitude toward pregnancy and the risk of neonatal death. American Journal of Public Health, 84 (3), 411-414.

Chamberlain, D.B. (1994a). How pre and perinatal psychology can transform the world. Pre and Peri Natal Psychology Journal, 8 (3), 187-199.

Chamberlain, D.B. (1994b). The sentient prenate: What every parent should know. Pre and Peri Natal Psychology Journal, 9 (1), 9-31.

DeCasper, A.J., & Spence, M.J. (1986). Prenatal maternal speech influences newborns' perception of speech sounds. Infant Behavior and Development, 9 (2), 133-150.

Emerson, W.R. (1996). The vulnerable prenate. Pre and Peri Natal Psychology Journal, 10 (3), 125-142.

Groome, L.J., Swiber, M.J., Bentz, L.S., Holland, S.B., & Atterbury, J.L. (1995). Maternal anxiety during pregnancy: Effect on fetal behavior at 38-40 weeks of gestation. Journal of Developmental and Behavioral Pediatrics, 16 (6), 391-396.

Halpern, R. (1992). Challenges in evaluating community-based health and social intervention: The case of prenatal care outreach. Journal of Social Service Research, 16 (3-4), 117-131.

Hepper, P.G., & Shahidullah, S. (1994). The beginnings of mind: Evidence from the behavior of the fetus. Journal of Reproductive and Infant Psychology, 12 (3), 143-154.

Karmiloff-Smith, A. (1995). Annotation: The extraordinary cognitive journey from feotus through infancy. Journal of Child Psychology and Psychiatry, 36 (8), 1293-1313.

Levinson, B. (1993). The rights of the unborn child seen through the eyes of a psychologist. Medicine and Law, 12 (6-8), 471-477.

Muller, M.E. (1992). A critical review of prenatal attachment research. Scholarly Inquiry for Nursing Practise, 6 (1), 5-22.

Schaffer, M.A., & Lia-Hoagberg, B. (1994). Prenatal care among low-income women. Families in Society, 75 (3), 152-159.

Van den Bergh, B.R. (1990). The influence of maternal emotions during pregnancy on fetal and neonatal behavior. Pre and Peri Natal Psychology Journal, 5 (2), 119-130.